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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,448	01/25/2002	Daniel Wang	669-77 CON	1290

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EXAMINER

WARREN, MATTHEW E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 07/31/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/057,448

Applicant(s)

WANG, DANIEL

Examiner

Matthew E. Warren

Art Unit

2815

-- The MAILING DATE of this communication appears on the certificate with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 15-37 is/are pending in the application.
- 4a) Of the above claim(s) 29-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 15-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Preliminary Amendment filed on April 24, 2002.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 29-37, drawn to a semiconductor device, classified in class 257, subclass 693.
- II. Claims 1, and 15-28, drawn to a method of making a semiconductor, classified in class 438, subclass 617.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process of coating could also be used to form an adhesion layer in a via as opposed to coating the IC with a protective encapsulating material.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Rohini Garg on July 17, 2002 a provisional election was made without traverse to prosecute the invention of Group II, claims 1 and

15-28. Affirmation of this election must be made by applicant in replying to this Office action. Claims 29-37 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

Claim 24 is objected to because of the following informalities: the last line of the claim should say "with coated bond wires." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not disclose that the bond wires have an oxidized outer insulation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 15, 16, 20, 22-24, 26, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Murdoch (US 4,002,282).

Murdoch shows (fig. 1) a method for packaging a high density integrated circuit having one semiconductor chip 20 disposed on a substrate (not shown) having a plurality of terminal pads (col. 2, lines 51-58) comprising forming a plurality of bonding pads 23, 24 in a plurality of rows and columns over a surface of the chip. Bond wires coated with an insulating material are provided (col. 3, lines 11-37). The method also includes connecting or attaching selected bonding pads on the chip with terminal pads on the substrate with the coated bond wires (col. 2, lines 56-59) and col. 3, lines 20-37). A plurality of semiconductor chips are disposed on the substrate and interconnections among selected bond pads on the chips are provided by insulated bond wires bonded to the selected bonding pads. The coated bond wires are attached onto the bonding pads by a ball shaped joint (col. 4, lines 23-26).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19, 21, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murdoch (US 4,002,282) as applied to claim 15 and 24 above, and further in view of Zechman (US 5,656,830).

Murdoch shows all of the elements of the claims except the materials of the bond wires and bond pads. Zechman discloses (col. 2, lines 8-29) a semiconductor chip comprising conductive sites (bond pads) of aluminum and insulated aluminum wires. Neither reference specifically shows the size of the wires however it would have been an obvious matter of design choice to use 15 micron wires since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify integrated package of Murdoch by using aluminum for wires and bond pads of a chip as taught by Zechman because such materials are suitable for connection of an integrated circuit.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murdoch (US 4,002,282) as applied to claim 24 above, and further in view of Schneider et al. (US 5,610,442).

Murdoch shows all of the elements of the claims except the encapsulation covering the chip which Schneider shows in figure 4. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the invention of Murdoch with encapsulation as taught by Schneider to provide protection for the semiconductor chip.

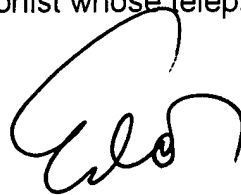
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shingai (US 5,950,100), Murdeshwar (US 6,180,891 B1), and Futami (JP 63269539 A) also show insulated bond wires for semiconductor chips.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (703) 305-0760. The examiner can normally be reached on Mon-Thurs, and alternating Fri, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

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July 29, 2002